

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. - 7. (cancelled)

8. (previously presented) An inorganic scintillator comprising: a direct-gap semiconductor and a pair of codopants in the semiconductor to provide dopant band to dopant trap radiative recombination, wherein one codopant is an acceptor dopant which produces holes in an acceptor band and the other dopant is a donor dopant trap which traps electrons until they recombine with holes in the acceptor band.

9. - 11. (cancelled)

12. (previously presented) An inorganic scintillator comprising: a direct-gap semiconductor; and a pair of codopants in the semiconductor to provide dopant band to dopant trap radiative recombination, wherein one codopant is an acceptor dopant which produces holes in an acceptor band and the other codopant is an isoelectronic dopant trap which traps electrons until they recombine with holes in the acceptor band.

13. - 16. (cancelled)

17. (previously presented) An inorganic scintillator comprising: a direct-gap semiconductor; and a pair of codopants in the semiconductor to provide dopant band to dopant trap radiative recombination, wherein the direct-gap semiconductor and pair of codopants comprises CdS:In,Te; Cd:In,Ag; or Cd:In,Na.

18. - 19. (cancelled)

20. (new) The scintillator of claim 8, wherein each codopant is present at about 0.01 mole % to about 1 mole %.

21. (new) The scintillator of claim 8, wherein each codopant is present at about 0.1 mole % to about 0.2 mole %.

22. (new) The scintillator of claim 8, wherein the direct-gap semiconductor is PbI₂, HgI₂, CuI, or ZnTe.

23. The scintillator of claim 8, wherein the direct-gap semiconductor is ZnTe.

24. (new) The scintillator of claim 12, wherein each codopant is present at about 0.01 mole % to about 1 mole %.

25. (new) The scintillator of claim 12, wherein each codopant is present at about 0.1 mole % to about 0.2 mole %.

26. (new) The scintillator of claim 12, wherein the direct-gap semiconductor is PbI₂, HgI₂, CuI, or ZnTe.

27. (new) The scintillator of claim 12, wherein the direct-gap semiconductor is ZnTe.